

The impact of Public-Private Partnerships on Zambia's economic growth and development

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Abstract

Zambia has adopted Public Private Partnerships (PPPs) as a pro-poor strategy and as an innovative financing model to contribute to the narrowing of the development financing gap. Despite the growth of PPPs in Zambia, there have been no formal assessments of the impact of PPPs. The aim of this study is to evaluate the impact of PPPs on Zambia's economic growth (proxied by gross domestic product {GDP}) and economic development (unemployment, household consumption and gini coefficient). The study employs quantitative method by using Auto-regressive Distributed Lag (ARDL) model as the time series model for the 18 years period from 2000 to 2017. The study shows that PPPs positively impact GDP and economic development through spurring of economic activities, improved household consumption and employment creation. However, the study has also shown that PPPs negatively impact economic development as the PPPs increased gini coefficient (income inequalities). How to ensure broad-based progress would require additional political-economic analysis.

Keywords: Public Private Partnership; GDP; Gearing; Unemployment; Household Consumption; ARDL.

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1. Introduction

The current globalisation is pressurising nations to fast-track change and development (Petri & Banga, 2020, p. 1; Yaya, Otu & Labonté, 2020, p. 1; Seeletse, 2016, p. 18). As such globalisation, which is viewed as the increase in economic activities among countries with a network of economic, social, cultural and political interconnections (Canchari, Mejia & Deng, 2020, p.32), can have profound impact on the countries' development, it is important to recurrently analyse the process. While economic growth and economic development are central to the achievement of development goals, countries in Africa have development deficits which comprise high illiteracy, inequalities in income and gender, mortality and unemployment rates (Ministry of Finance and National Planning, 2011, p. 1; United Nations Development Programme (UNDP), 2015, p.217). Such development deficits are compounded by limited resources that developing countries have. For this reason, governments and other stakeholders have developed a myriad of innovative financing models and options to achieve inclusive social and economic development. In particular, blended finance through public-private partnerships (PPPs), has accounted as one of the innovative financing models for funding development. Although there is no uniform definition of PPP, Mfunwa, Taylor and Kreiter (2015, p. 2) and Organisation for Economic Co-operation and Development (OECD) (2008, p. 12) view PPP as an agreement between the government and private partners for the delivery of public service objectives that are aligned with the profit objectives of the private partners. As such governments have used and are using PPPs as mechanisms to procure, implement and manage public infrastructure and services making public procurement and traditional budgeting practices a distant memory in many jurisdictions.

Zambia, like other countries in Africa, has a huge financing gap relating to infrastructure development (Zambia Development Agency [ZDA], (2014, p. 2). In 2011, Foster and Dominguez (2011, p. 1) concluded that Zambia experienced an infrastructure financing gap of \$500 million a year. The infrastructure financing gap has widened and increased from \$500 million in 2010 to about \$1.4 billion a year by the end of 2018 (Rasmussen, 2018, p. 8). The increased financing gap can challenge the competitiveness of Zambia and can be a handicap to the achievement of economic growth and economic development. The United Nations Department of Public Information (2017, p. 6) argued that the engagement of the private sector through PPPs could narrow the financing gap and contribute to economic growth and economic development. Fi (2018,

p. 1) states that in Zambia the PPP model is a viable option for plugging the infrastructure financing gap so as to promote economic growth and economic development. The Ministry of Housing and Infrastructure Development (2019, p. 1) postulates that as Zambia is a land-linked country surrounded by eight other countries, investments in infrastructure in the form of roads, bridges and energy solutions can bolster not only Zambia's economic activities but also those of neighbouring countries and beyond. Consistent with the views of Roman (2015, p. 5), Zambia has turned to partnerships with the private sector because the social needs of citizens have changed over time and that the lines between what is public and what is private in terms of goods and services have become blurred.

While PPPs as a project finance model have increased in number and value in developing countries (Obeng-Odoom, 2013; Loxley, 2013, p. 485; Craig, 2000, p. 357; Loxley, 1990, p. 8), there is ever-increasing debate on the value of PPPs globally. According to the Boston Consulting Group (2017, p. 11), the developing countries have witnessed increased investments in PPPs in infrastructure, from \$10 billion in 1990 to \$325 billion in 2014. The civil society organisations are questioning the value of PPPs in both developed and developing countries in the midst of development deficits (Gondard, Romero & Ravenscroft, 2018, p. 4). According to the World Bank (2018, p. 1) and the Public-Private Partnership Department Zambia (2019, p. 1) the value of annual PPP investments increased from \$0.80 in 2000 million to a cumulative value of \$2,876 million in 2017 in Zambia, contributing to a reduction in the development financing gap. While PPPs have increased in value, access to electricity, clean water, health, and education remain key development challenges in Zambia. In particular, national access to electricity and clean water in 2018 stood at 31% and 60% of the population respectively (Bayliss & Pollen, 2021, p. 5; United States Agency for International Development [USAID], 2020, p. 1; Water Aid Zambia, 2020, p. 2), challenging the country's efforts to alleviate and ultimately eradicate poverty. Consequently, assessing the impact of PPPs on economic growth and development is both urgent and necessary to ensure that Zambia achieves its Vision 2030 goal of becoming a middle-income and industrialised nation. Furthermore, the narrowing of the financing gap through PPPs for development in Zambia strongly requires an assessment of the contribution of PPPs towards the improvement of people's living standards. Despite the growth in PPPs in Zambia, there is a lack of evidence-based assessment of the impact of public private partnerships on Zambia's economic growth and development. The fundamental question becomes: what is the impact of PPPs on Zambia's economic growth and development? The existing studies, which seek to address

this question, are quite dated (e.g., Loxley, 2013, p. 485; Craig, 2000, p. 357). More recent ones use rather narrow development indicators, which overlook inequalities and broader questions of social stratification (Obeng-Odoom, 2020; Bhorat, Chelwa, Naidoo & Stanwix, 2019, p. 128; Bhorat, Kachingwe, Oosthuizen & Yu, 2017, p. 3). Therefore, this study evaluates the impact of PPPs as a pro-poor policy, focusing on the tensions between growth, inequalities, and social stratification. The evaluation is an assessment of the contribution of PPPs to Zambia's economic growth and economic development for poverty reduction or eradication. The study employs ARDL estimation model for determining the relationship between PPPs and economic growth and economic development as well as the impact of PPPs on Zambia's economic growth and economic development.

2. Literature review

As no single definition of a PPP exists, it is evident that there are varying theoretical underpinnings for PPPs. Consequently, PPPs are a broad church of many families (Hodge & Carsten, 2014, p. 5). The major and common theories on PPPs include the Agency, Stakeholder and X-efficiency Theories. The Agency Theory explains the relationship between the principal and the agent, where the agent has been engaged by the principal to pursue the principal's business interests as well as representing the principal (Parker, Dressel, Chevers & Zeppetella, 2018, p. 7; De Palma, Leruth and Prunier, 2012, p. 67). Parker *et al* (2018, p. 6) theorise that the government or a government entity is a principal while the private sector is the agent in PPP projects. The Agency Theory as the theoretical approach to PPPs ignores other important stakeholders like lenders, civil society organisations, banks and others that play important roles in PPP projects. Therefore, consideration of the Stakeholder Theory in PPP research helps unmask the stakeholders involved as well as their responsibilities in achieving PPP objectives. While consideration of all stakeholders is critical for the success of any PPP, the stakeholder approach makes the PPP process complex, as it is difficult to manage a broad range of stakeholders. The X-efficiency theory is based on two strands of thought that comprise the view that inefficiencies in public procurement can be overcome by private sector engagement, as expounded by Leibenstein (1966, p. 392) and the view that public intervention is necessary in the case of market failure (Xie and Stough, 2002, p. 9). With the need for collaboration between public and private sectors to achieve inclusive economic growth and economic development, this study adopts the X-efficiency theory to inform the investigation into the impact of

PPPs on Zambia's economic growth and development. This is consistent with developed and developing countries' focus on partnering with the private sector to improve the living standards of their people.

Many economic policies such as inflation targeting and investment incentives in particular, sectors can have significant influence on economic growth of developing and emerging economies (Simatele, Schaling & Alagidebe, 2015, p. 2; Ndlovu & Schaling, 2017, p. 202). While many sources of finance such as investments in mines and agriculture by the private sector can have influence on Zambia's economic growth and economic development, PPPs have been formulated specifically to bridge the development finance gap so as to improve the living standards of the people. PPPs are thus seen from the theoretical lens of a pro-poor strategy to enhance economic growth so as to improve living standards of the majority poor people. In what follows, we review some of the key themes in the research on PPPs.

2.1. Determinants of PPP projects

Studying the determinants on PPPs has been a major line of research (e.g., Osei-Kyei & Chan, 2015, p. 1336; Dada & Oladokun, 2012, p. 13; Ahmed & Sipan, 2019, p. 62). While the success of any PPP project can be influenced by a variety of factors, it is important to identify the critical factors that may determine the success of a PPP project. For African countries like Zambia, it is of paramount importance to document the factors that can contribute to the success of PPP projects, so as to enable evaluation of this pro-poor strategy or policy aimed at reducing and/or eliminating poverty resulting in improved popular living standards. If successfully pursued, PPPs can deliver benefits to the various stakeholders involved in the PPPs, leading to the so-called triple wins – benefiting users, government and private sector (Kim, 2018, p. 1). The discussion above also makes allowance for critical success factors (CSFs), an important consideration for the planning and implementation of PPP projects.

According to Osei-Kyei and Chan (2015, p. 1336), Dada and Oladokun (2012, p. 13) and Ahmed and Sipan (2019, p. 62) CSFs are viewed as those activities in which PPP projects must excel to achieve their objectives as PPP projects. Similarly, Muhammad and Johar (2019, p. 3) see CSFs as factors whose existence significantly enhances the success of a project and which, if not taken seriously, will lead to the failure of that project. Muhammad and Johar (2019, p. 3) find further that the CSF approach is an attempt to isolate vital areas that are essential for PPP projects to achieve success. Matshonisa (2016, p. 24) states

that PPP project failure counts as a drawback for development. Matshonisa (2016, p. 24) also advises that no single element can ensure the success of a PPP project, but rather that combinations of factors can enhance success. Chan, Lam, Chan, Cheung and Ke (2010, p. 484), Dada and Oladokun (2010, p. 1) and Sharma (2011, p. 154) contend that the major CSFs or determinants of PPP projects include: equitable allocation of risks, government resource constraint, stable macroeconomic conditions, project economic viability, adequate legal framework, an accessible financial market and a strong private sector.

2.1.1. Risk allocation and sharing

According to Sanda, Anigbogu, Rugu and Babas (2020, p. 43) and Dada and Oladokun (2010, p. 1), project risks are viewed as any factors or events that threaten the successful completion of a project in time, cost or quality. The allocation and sharing of risk is one of the fundamental components of a PPP arrangement and involves identifying risks and sharing them appropriately among the public and private sectors as parties to the PPP agreement (Jin & Doloi, 2008, p. 707; Osei-Kyei & Chan, 2015, p. 1345; Ke, Wang, Chan & Lam, 2010, p. 482). Hyun, Park and Tian (2018, p. 17) hold that collaboration between government and the private sector empowers the parties to build essential infrastructure and to cover all the risks inherent in infrastructure projects. This suggests that an optimal risk- and profit-sharing mechanism must be designed to strike a balance between the parties and to encourage the involvement of the private sector (Hyun *et al*, 2018, p. 17).

Umar, Idrus, Zawawi and Khamidi (2012, p. 305) emphasise that proper risk management is one area where the private sector is ahead of the public sector, as the private sector is more enterprising and is always on the lookout for anything that will threaten project profitability. It can be inferred that each party in a PPP project takes on risk that it has expertise to handle. It is evident that appropriate allocation of risk among between PPP project parties is critical as it could affect the success of the PPP project. Conversely, inability to allocate risk appropriately and reliably may result in the failure of a PPP project. However, Chan and Osei-Kyei (2015, p. 9) warn governments to ensure that not all the risks are transferred to the private sector, as that might discourage private engagement in PPP projects. The success of PPP projects can be influenced by how risks have been shared and managed. Consequently, an understanding of PPP risks is essential in unpacking the relationship between PPPs and economic growth and development.

2.1.2. Government resource constraint

Against the backdrop of limited government resources, Sharma (2011, p. 154) states that the PPP-type arrangement is better suited to countries where governments have resource constraints and where considerable infrastructure gaps exist. This provides impetus for the government to bring the private sector on board to take part in the development by providing financial resources (among other resources). Sharma (2011, p. 154) finds that countries that have fewer natural resources and more external debt than other countries are likely to adopt a PPP arrangement. By contrast, countries which export crude oil and have higher domestic savings are expected to invest directly in infrastructure projects. The argument is that the government's resource constraint can account for the need for PPP projects. This is premised on the view that engaging the private sector would allow access to resources like finances to enable the government to fulfil its responsibility of providing public goods. For this study, it is clear that private sector engagement through PPPs contributes to bridging the huge development financing gap. This provides a clear understanding of the need for collaboration between the Zambian government and the private sector to achieve economic growth.

2.1.3. Stable macroeconomic condition

Many studies (e.g., Lee, Han, Gaspar and Alano, 2018, p. 1; Jasiukevičius & Vasiliauskaitė, 2013, p. 226; Sharma, 2011, p. 154; Hammami, Ruhashyankiko & Yehoue, 2006, p. 4) have also examined stable macroeconomic conditions and how they shape PPPs. One early study, Sharma (2011, p. 154), found that a sound macroeconomic environment can significantly reduce the commercial risk of private firms and increase their prospects of profitability. Hammami *et al* (2006, p. 4) echo this and argue that macroeconomic stability is essential for PPPs because partnerships are more common in countries with low inflation. Stable macroeconomic conditions relating to interest, exchange and inflation rates are critical for successful PPP projects, particularly in terms of VfM for governments. For the private sector parties, it is equally important that suitable conditions are in place for the realisation of acceptable returns on investments made in PPP projects. For this research, inflation is used as a control variable, as it is one of the key factors that influence economic growth. Therefore, maintaining a stable inflation rate encourages private sector engagement in PPPs. This research employs inflation as a control variable for investigating the impact of PPPs.

2.1.4 Project economic viability

Like any other project, a PPP must be one that is bankable to allow its selection for implementation. As PPP projects employ a high debt-equity ratio (high gearing), returns on PPP projects must be acceptable and high enough to cover the project costs and repay the debt (Zhu & Chua, 2018, p. 2). Zhu and Chua (2018, p. 2) state that a PPP project is considered bankable if lenders are willing to finance it or the sponsor can convince the lenders to support it. Also, establishing enhanced bankability for a PPP project is critical because ultimately the financial market will judge the project on its own merits without the traditional government repayment guarantees (Zhu & Chua, 2018, p. 2). Hyun *et al* (2018, p. 12) agree that the viability of a PPP project like an infrastructure project is essentially secured by future cash flows and financing cost. Demand for the service and affordability account as good prospects for potential cash flows (Hyun *et al*, 2018, p. 12).

2.1.5. Adequate legal framework

Sharma (2011, p. 156) states that the success of a PPP project depends critically on the regulatory environment in the country, which in turn is determined by the quality of its institutions. Urio (2010, p. 22) finds that to ensure the success of PPP projects there must be rules protecting private property, fair compensation in the case of nationalisation, and the possibility of repatriation of profits for foreign investors. Also, there should be a fair, clear and transparent tendering procedure, assuring competition and a competent and fair evaluation of the PPP proposals (Urio, 2010, p. 22). It is argued that an adequate legal framework can promote private sector engagement in PPP projects, in this way contributing to the success of such projects. This view is chiefly premised on the view that the private sector would provide the financial resources and commercial expertise necessary for the success of the PPP project. This discussion of the legal and institutional framework for PPPs in Zambia has helped towards understanding the intention and purpose of PPPs in Zambia. This in turn has facilitated the investigation of the impact of PPPs in Zambia.

2.1.6. Available financial market

Ahmed and Sipan (2019, p. 63) contend that the availability of a mature financial market with a diversified range of financial services will lower financing costs and this would attract private investors to PPP projects. Hyun *et al* (2018, p. 11) state that PPP projects depend on market access to private borrowing, requiring the private sector to source the initial capital for projects upfront. PPP

funds are ultimately sourced from capital markets, which entails that access to finance plays an essential role in determining the financial viability of a PPP project (Hyun *et al*, 2018, p. 11). Similarly, Cheung, Chan, Lam, Chan and Ke (2012, p. 654) acknowledge project finance and the existence of a strong financial market account as key factors for attracting private sector investments. Financial markets enable movement of financial resources to areas or projects that require financing and where returns are expected to be realised by the parties involved. The presence of financial markets has helped in the understanding of the available sources of finance for PPPs in Zambia.

2.1.7. Strong private sector

Hyun *et al* (2018, p. 11) state that in developing countries, investment in infrastructure and services – particularly during the early stages of development – is of critical importance as it sets the framework for subsequent investment by both public and private sectors. Given the resource constraints faced by developing countries, the private sector becomes an important partner for development. Hyun *et al* (2018, p. 2) state that developing countries may find it challenging to stimulate private participation in the provision of infrastructure and services because of their poor sovereign creditworthiness, the underdevelopment of financial markets, and high economic risk inherent in infrastructure projects. Cheung *et al* (2012, p. 651) admit that private sector parties in PPP projects should be those that are sufficiently competent and financially capable of taking up the projects. This entails that a strong private sector comprises both the existence of different private sector companies and their ability to undertake PPP projects. Such a condition could improve the success of PPP projects. This means that a well-developed private sector may condition the success of PPP projects. For this study, the private sector is seen as an important player in PPPs to help achieve Zambia's economic goals.

2.2. Empirical literature on impact of PPPs on economic growth and economic development

2.2.1. PPPs and economic growth

Growth in PPPs has contributed to debates on the value of PPPs, particularly for African countries. In developing countries, PPPs are viewed as deliberate pro-poor strategies to boost economic growth. Lee, Han, Gaspar and Alano (2018, p. 1) find that there are theoretical arguments supporting the view that PPPs can improve economic growth, but empirical evidence is thin. The proponents of PPPs for infrastructure development in both developed and developing countries

have faced resistance from pressure groups such as the civil society organisations (Leigland, 2018, p. 103). Leigland (2018, p. 103) finds that PPP proponents believe that criticisms by pressure groups have not been supported by empirical research. Using qualitative method through the review of literature, Bwana (2014, p. 205) argued that PPPs in the health sectors of African countries have brought about these benefits: increase in health services infrastructure provision; creation of infrastructure promotes economic activities; reduced cost in the construction of hospitals; and risk-sharing between private and public organisations.

Similarly, in South Africa, Oxford (2019, p. 3) records that the De Hoop Collection project (PPP project in the hospitality sector) benefited both the public and private sectors including ordinary citizens. Oxford (2019, p. 3) extends her argument that PPPs in other sectors of the economy have spurred economic activities, in this way contributing positively to both local and national economic growth. The limitation of Oxford's study was that only three PPP projects were considered and as such were not representative of the PPPs in South Africa (Oxford, 2019, p. 6). In his seminal work, Rankin *et al* (2016, p. 9) having employed interviews as their single qualitative research method, find that multi-million-dollar PPP projects in the agriculture sector have huge positive impact on economic growth. Such PPP projects have improved access to markets and have also led to improved product quality. However, the study only focused on PPPs in the agricultural sector, making it difficult to replicate the findings to other countries.

In Europe, using PPP and GDP data for 10 identified European countries for the 16-year period 1995-2011, Jasiukevičius and Vasiliauskaitė (2013, p. 226), through the adoption of correlation as a single quantitative method, find that the results of their research on the relationship between PPPs and GDP were mixed. For example, statistically significant relationships between PPPs and economic growth were observed in Belgium, Ireland and France, while in the UK the results were less significant. Similarly, in Asian countries different research results on the relationship between PPPs and economic growth and economic development have been reported. The study conducted in South Korea by Kim *et al* (2011, p. 5), who employed time series as a single quantitative method, revealed that PPP investments were positively related to economic growth. Similarly, Lee *et al* (2018, p. 11) found that PPP investments and economic growth had positive and statistically significant relationships with each other. Consequently, a bi-directional relationship was reported. In their study, Lee *et al* (2018, p. 11) employed regression analysis as a quantitative research method.

In the Netherlands, the Ministry of Foreign Affairs (2013, p. 13), which adopted qualitative method by reviewing literature, confirms that PPP projects mobilised financial resources, leading to financial deepening. This had a positive impact on economic growth. A total of 13 out of the 15 PPPs representing about 87% of PPP project case studies in the Netherlands showed that PPPs had a positive impact on economic growth (Netherlands Ministry of Foreign Affairs, 2013, p. 13). Similarly, Khashaba, Aboelsoud and Sallam (2016, p. 1) using ordinary least squares (quantitative method), report that in both Egypt and the UK, PPPs have spurred economic activities, and hence positively and significantly affecting economic growth in both countries. From a theoretical perspective, in the agriculture sector PPPs are broadly promoted as having the potential to help modernise the agriculture sector and deliver multiple benefits by spurring economic activities and achieving efficiencies (Rankin *et al*, 2016, p. 8). This theoretical perspective with regard to PPPs is the fundamental message across all sectors where PPPs are promoted.

However, case studies analysed by Gondard, Romero and Ravenscroft (2018, p. 4) across four continents – Africa (Liberia, Lesotho), Asia (India, Indonesia), Europe (Spain, Sweden, France) and South America (Peru, Colombia) – revealed that: PPP projects involve huge capital injections, causing a burden on the public purse; PPPs affected the poor negatively and heightened income inequalities; all the PPPs reviewed affected the environments in which they were implemented negatively; and there were complications in managing and implementing PPPs, as they required high regulatory and technical competency. It is evident that PPP projects that come with a high cost for the public purse would affect economic growth negatively. In these 10 countries, it was concluded that PPPs had a negative impact on economic growth (Gondard *et al*, 2018, p. 4).

According to Bwana (2014, p. 206), although PPPs create powerful mechanisms for addressing development problems by leveraging the strengths of different partners, they can present complex ethical and process-related challenges. In periods of budgetary constraints, PPPs can be seen as a panacea for the delivery of social services required by the citizenry (Bwana, 2014, p. 206). Khashaba *et al* (2016, p. 1) caution that policymakers should realise that while the benefits of PPPs are clear and visible, they are not automatic, so earning PPP benefits requires credible and stable macroeconomic conditions, an effective and supportive legal and regulatory framework, political commitment and efficient financial markets. Consequently, governments are expected to take stock of the number of PPPs, value of the PPP investments and the sectors in

which the PPP investments are made to help them monitor the performance of PPPs in contributing to economic growth. The data can be collected through a simple excel schedule that can be updated on a regular basis. The data can be disaggregated by district, province and sector. The PPP Department is well placed to collect and store such data.

2.2.2. PPPs and economic development

The general proposition is that if PPPs affect economic growth positively, they should also have a positive impact on economic development in the long term. For developing countries facing development deficits like high rates of poverty, unemployment, mortality and high inequality in incomes, PPPs are promoted as addressing such development deficits. PPPs represent an effective and innovative instrument for increasing and sustaining the economic growth rates of countries around the world (Ahmad, 2017, p. 1). As argued by Hellowell (2015, p. 51) who employed qualitative method through literature review, PPPs are seen as major drivers of economic development. With such propositions, the evaluation of PPP performance to assess their impact on economic development becomes an essential exercise.

According to Bwana (2014, p. 205), African countries have benefited from PPPs in many sectors, like the health sector through improved service delivery (improved health service delivery). Oxford (2019, p. 3) documents that PPP projects like the De Hoop Collection, Redefine, Riversands and Rheinmetall Denel Munitions have created employment and improved access to transport, clean water and educational services. Similarly, Rankin *et al* (2016, p. 9) document that in the agriculture sector, PPPs of all types have reported that employment has been created particularly for local communities. Also, PPPs in the agriculture sector have contributed to the reduction of income inequalities through improved net income for farmers and their workers. PPPs have improved product quality thereby contributing positively to the living standards of ordinary people (Rankin *et al*, 2016, p. 9). Similarly, Lee *et al* (2018, p. 11), in Asia, find that PPPs have a positive macroeconomic effect. This entails that an investment boom in PPPs was associated with higher economic growth, improving economic development in the long term. Increased investments in PPP projects generated employment in both the short and long term. Lee *et al* (2018, p. 11) also note that increased PPP investments drew in private investment, affecting economic growth positively and in the long term affecting economic development positively.

The theoretical perspective of PPPs holds that such projects aim to improve economic development through reductions in unemployment, poverty, mortality and inequalities in income rates. Rankin *et al* (2016, p. 9) state that PPPs in the agriculture sector have the potential to improve living standards of ordinary people. The PPP mechanism aims to pool resources like finance and expertise to improve construction and the management of public assets (Rankin *et al*, 2016, p. 9).

Despite the promise of PPPs, stakeholders – particularly activists from civil society organisations – do not believe in the PPP message. Bayliss and Waeyenberge (2017, p. 1) observe that PPPs remain a highly contested vehicle for infrastructure financing and delivery. Gondard *et al* (2018, p. 38) urge all those concerned with justice, equality, sustainability and human rights to resist the encroachment of PPPs and to push instead for high-quality, publicly funded, democratically controlled, accountable public services. Their argument is premised on the findings from 10 countries in which they concluded that: PPPs affected the poor negatively and contributed to increased income inequalities; all the PPPs reviewed had a negative impact on the environments in which they were implemented; the public entities had to manage more risks than the private sector, demonstrating that risks were not appropriately shared among the parties; fifty per cent (50%) of the assessed PPP projects had a negative impact on the poor, hence affecting the living standards of ordinary people negatively.

Similarly, Hall (2015, p. 7), who adopted literature review as a qualitative method to his study, finds that PPPs essentially originated as an accounting trick so that public debt contracted by the public entity is not disclosed in the books of accounts, as the debt was treated as an off-balance-sheet liability. As Enron had tried to conceal its true liabilities by moving them off balance sheet, governments can use PPPs as tricks through which public accounts do not include PPP investments. Hall (2015, p. 7) premises his argument on the view that the profit-oriented private sector would maximise profits which could lead to reductions in the workforce, and so affecting poor citizens negatively. In their studies, Bayliss and Waeyenberge (2017, p. 1) find that critics of PPPs have pointed to their high costs, the long-term and rigid nature of contracts, the difficulty in finding sufficient appetite on the part of private investors, and varying assessments of their performance in terms of efficiency, risk transfer and social effect. Boardman *et al* (2016, p. 2) contend that the government remains the residual risk holder, and risks might not really be transferred to the private sector.

Gundogdu (2019, p. 25) contends that PPPs should not be assumed as a panacea in development finance since, regardless of decades of infrastructure development by multilateral development banks (MDBs) and domestic governments, human misery in the form of poverty and hunger persists on earth. Gundogdu (2019, p. 40) reminds us that we should be ready to question infrastructure development as the wonder ingredient for poverty alleviation and hunger. As the intention of PPPs as pro-poor policy is to reduce and/or eradicate poverty, governments through their statistics departments are expected to be collecting data relating to poverty, unemployment, household consumption and gini coefficient particularly where the PPP investments are made. In addition, compilation of accurate human development index over the same period of PPP investments may comprise a relevant proxy for economic development when evaluating the impact of PPPs on economic development. The data can be collected through a simple excel schedule that can be updated on a regular basis. The data can be disaggregated by district, province and sector. In collaboration with the Statistical Office, PPP Department is well placed to collect and store such data.

These studies resolve many issues in the debates on PPPs. For example, they clarify the types of PPPs. They also demonstrate the extent of PPPs in Africa. However, the studies also leave a critical question unaddressed, namely: what is the impact of PPPs on economic growth and economic development of the African countries such as Zambia? On one hand, the existing literature which have investigated the impact of PPPs are quite outdated (e.g., Loxley, 2013, p. 485; Craig, 2000, p. 357). On the other hand, the more recent studies that have focussed on investigating the impact of PPPs on economic growth and economic development have used narrow development indicators thereby overlooking inequalities and broader questions of social stratification (Obeng-Odoom, 2020; Bhorat *et al*, 2019, p. 128 & Yu, 2017, p. 3).

3. Methodology

To address this question, this study uses secondary data obtained from the Ministry of Finance, the Bank of Zambia, World Bank, Central Statistics of Zambia, United Nations agencies, Ministry of National Development Planning and Ministry of Health. The secondary data comprised bi-annual data for all the research variables covering the period from 2000 to 2017 which formed the basis for determining the relationship between PPPs and Zambia's economic growth and economic development as well as the impact of PPPs on

economic growth and economic development. There are many problems of data availability and quality in African countries (Chelwa, 2021, p. 78 & Jerven, 2022). In comparison to the developed world, African countries research data may generally be considered poor due to its unavailability (Jerven, 2022). In addition, limited research has contributed to lack of availability of research data on the impact of PPPs on economic growth and economic development. To overcome these problems, we have used reliable sources such as World Bank and government departments. The World Bank regularly compiles data that is obtained from different countries making comparison across African countries a reality and easy for researchers.

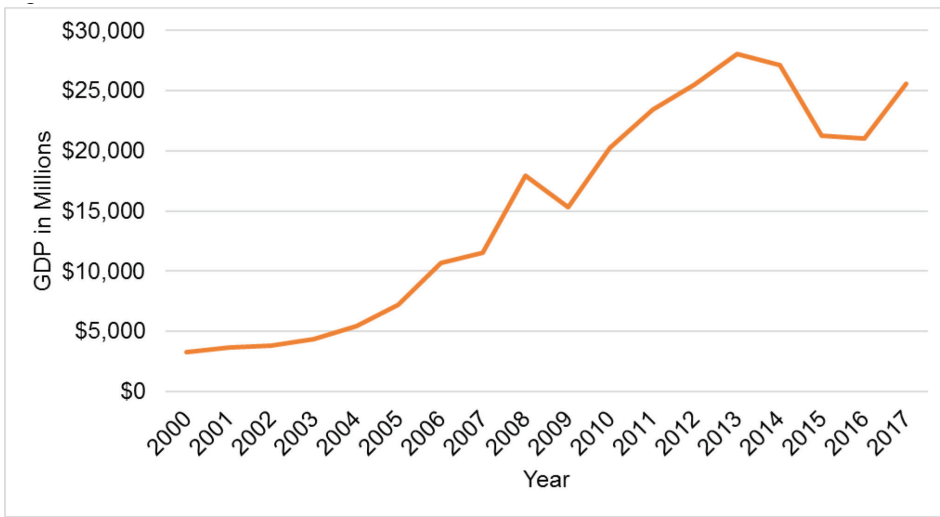
3.1. Study's variables

This study has employed gross domestic product (GDP), unemployment rates, household consumption, the Gini coefficient, PPP investment, PPP investment by sector and source of PPP finance. The study's control variables included inflation, government expenditure on health and trade openness.

3.1.1. Gross domestic product (GDP)

The proxy for economic growth for this research is gross domestic product (GDP). Dynan (2018, p. 1) and Tjukanov (2011, p. 2) acknowledge that GDP has been standardised as an economic indicator by the UN System of National Accounts, measuring the total output of goods and services of a state during a certain period. However, other scholars have not favoured the use of GDP as a proxy of economic growth. Prasad and Castro (2018, p. 3), Stone (2017, p. 1) claim that GDP addresses average income but fails to reflect how most people actually live or who benefits from economic growth. In both developed and developing countries GDP has been widely used as the measure of economic growth (World Bank, 2018, p. 1). Given its wider use, the availability of GDP data and consistent with Kramer (2020, p. 1), Adams (2018, p. 1), Fagan (2019, p. 3), Fox (2012, p. 1) and Trpkova (2011, p. 13), this research has adopted GDP as a measure of economic growth to allow an investigation of the impact of PPPs on Zambia's economic growth. Figure 1 reveals that Zambia's GDP has been growing steadily.

FIGURE 1: ZAMBIA'S GDP TREND FROM 2000-2017



Source: Bank of Zambia (2019, p. 1) and Southern African Development Community [SADC] (2019, p. 4)

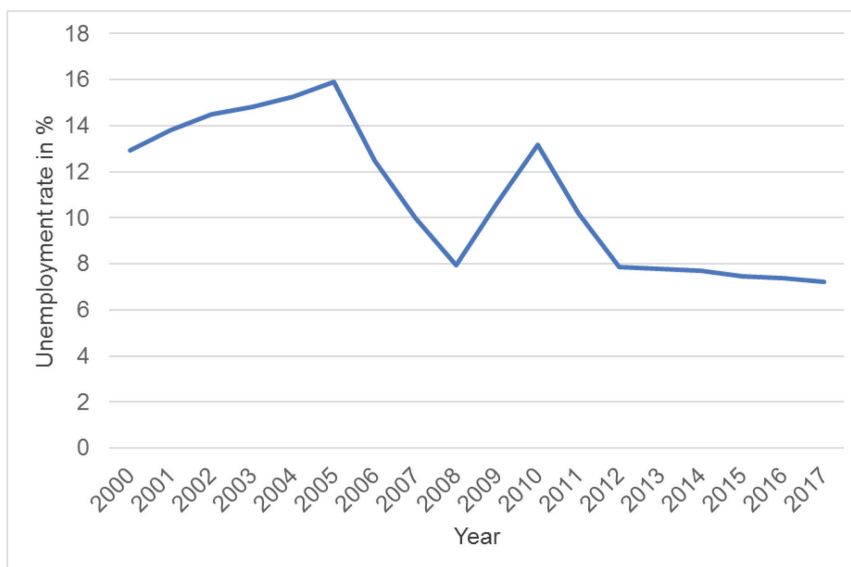
3.1.2. Economic development

The United Nations has developed the human development index (HDI) as a tool to measure and rank various countries' levels of social and economic development (Chappelow, 2020, p. 12; United Nations Development Programme, 2016, p. 1). The Department for International Development [DFID] (2007, p. 1) and researchers including Ivic (2015, p. 55), Ranis, Stewart and Ramirez (2000, p. 197), the International Growth Centre (IGC) (2018, p. 3), Cumming and Cramon-Taubadel (2018, p. 9 533), Peter and Bakari (2019, p. 1), Klasen and Lawson (2007, p. 1), Were (2015, p. 71), Oluchukwu, Chinyere and Francisca (2019, p. 82), Chowdhury and Hossain (2018, p. 1) and Popov (2017, p. 50) have used poverty rates, unemployment rates, Gini coefficient, household consumption, life expectancy and mortality rates (among others) as measures of economic development. This study has employed unemployment rates, household consumption and the Gini coefficient not only because such proxies are widely used but also since such data is easily and consistently available in Zambia. Since the intention of PPP policy was to improve GDP, create employment and improve the living standards of the people, proxies like unemployment rates, Gini coefficient and household consumption were considered relevant and suitable for the study.

3.1.2.1. Unemployment rates

Figure 2 shows that the unemployment rates took a downward trend for the period under review. The unemployment rates among the employable labour force reduced from 12.93% to 7.21% in 2017 representing an overall decrease of 44% (World Bank, 2019: 1).

FIGURE 2: ZAMBIA'S UNEMPLOYMENT RATES TREND (2000-2017)

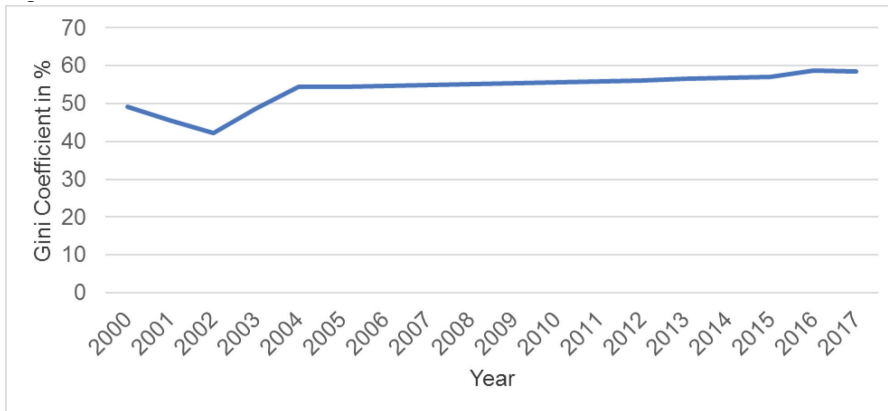


Source: World Bank (2019, p. 1)

3.1.2.2. Gini coefficient

Figure 3 shows that overall, the Gini coefficient increased from 49.2% in 2000 to 41.2% in 2017 due to diversification of the economy into other sectors, like agriculture, construction and services. However, Gini coefficient rates have remained high from 2004 to 2017 at 54.3% and 58.6% respectively (World Bank, 2020, p. 1) demonstrating that inequality has not improved.

FIGURE 3: GINI COEFFICIENT 2000-2017

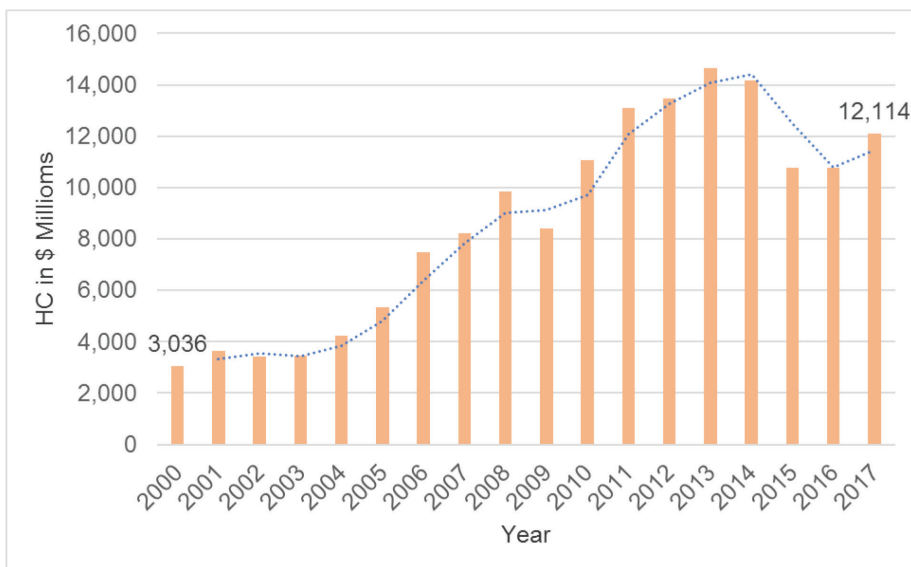


Source: World Bank (2020, p. 1)

3.1.2.3. Household consumption

Figure 4 reveals that the HC has steadily increased from \$3,036 million in 2000 to \$12,114 million in 2017 representing an increase of about 300% (United Nations, 2018, p. 1). The increased investments in mining as well as the diversification of the economy into sectors like agriculture, construction and services, contributed to increase or expansion in peoples' incomes, thereby leading to increase in household consumption.

FIGURE 4: HOUSHOLD CONSUMPTION 2000-2017



Source: United Nations (2018, p. 1)

3.2. Study's econometric model

Menegaki (2019, p. 1) contends that for an econometric model to be trusted and reliable, it must be robust. To support the robustness of an estimated model, one needs to conduct various diagnostic tests (Menegaki, 2019, p. 1). So diagnostic tests were undertaken to investigate the goodness of fit of the model. Menegaki (2019, p. 1) and Cañal-Fernández and Fernández (2018, p. 8) state that diagnostic tests aim to investigate the goodness of fit, stability and functional form. In all diagnostic tests, the null hypothesis is that the variable contains a unit root which entails that the variable is not stationary (Cañal-Fernández & Fernández, 2018, p. 8). Cañal-Fernández & Fernández (2018, p. 8) hold that diagnostic tests examine the model for serial correlation, non-normality and heteroscedasticity. Consistent with Dritsaki & Stiakakis (2014, p. 187), Cañal-Fernández & Fernández (2018, p. 8), Sultanuzzaman *et al* (2018, p. 12), Makuyana & Odhiambo (2018, p. 519) and Matlasedi (2017, p. 12), this research conducted normality, serial correlation and heteroscedasticity tests to strengthen the reliability of the autoregressive distributed lag (ARDL) model in the determination of the long-run relationships of the variables.

The ARDL model has been employed as a linear time series model in which both the dependent and independent variables are related not only contemporaneously, but across historical (lagged) values as well (Giles, 2017, p. 1). The ARDL model is argued to be the appropriate model for this study because of its flexibility in the use of order of integration (I(0) and I(1)), high estimation power and ability to produce valid t-statistics and unbiased estimates (Sarker & Khan, 2020, p. 1; Makuyana & Odhiambo, 2018, p. 509; Odhiambo, 2008, p. 704; Shrestha & Chowdhury, 2007, p. 1529; Pesaran & Shin, 1999, p. 53). The study, therefore, employs bounds tests that involve F tests for identifying the relationships between the variables (Sultanuzzaman, Fan, Akash, Wang & Shakij 2018, p. 10; Cañal-Fernández & Fernández, 2018, p. 9). In order to evaluate the impact of PPPs, the study adopts the use of probability values which are compared with confidence levels of 1%, 5% and 10%.

To investigate both the relationships and impact of PPPs on Zambia's economic growth and economic development, the study employs the following ARDL model specification:

$$Y = \beta_0 + \beta_1 X_{t-1} + \beta_2 X_{t-1} + \beta_3 Y_{t-1} + \varepsilon_t \quad (1)$$

Where:

β_0 is the intercept; β_1 is the coefficient of the PPP; β_2 is the coefficient of trade

openness; β_3 is the coefficient of government expenditure on health; Y is the dependent variable; X represents both independent and control variables; a and b are coefficients; i and t are indices for individuals and time; and ε is the error term. The study used a maximum of one lag due to limited observations (bi-annual data for 17 translated to 34 observations).

3.2.1. *Economic growth*

The paper employs GDP to represent economic which is defined as the change in national income over time, usually measured over one year (Dewett & Navalur 2013: 911).

LGDP

$$\begin{aligned}
 &= \beta_0 + \beta_{PPPv}PPPv_{t-1} + \beta_{PPPSf}PPPSf_{t-1} + \beta_{PPSe}PPSe_{t-1} + \beta_{INF}INF_{t-1} + \beta_{GH}GH_{t-1} \\
 &+ \beta_{TO}TO_{t-1} + \beta_{GDP}LGDP_{t-1} + \sum_{i=1}^p \beta_i PPPv_{t-i} + \sum_{j=0}^q \beta_j PPSPf_{t-j} + \sum_{k=0}^r \beta_k PPSe_{t-k} \\
 &+ \sum_{l=0}^u \beta_l INF_{t-l} + \sum_{m=1}^v \beta_m GH_{t-m} + \sum_{n=1}^t \beta_n TO_{t-n} + \sum_{o=0}^u \beta_o LGDP_{t-o} \\
 &+ \varepsilon_t
 \end{aligned} \tag{2}$$

3.2.2. *Economic development*

Social stratification, which is the ranking of individuals and groups into hierarchical layers such that inequality exist in the allocation of rewards, privileges and resources, is a critical consideration when discussing economic development (Oyekola & Eyitayo, 2020, p. 126). Obeng-Odoom (2020:12) resonates this and argues that inequalities in Africa are non-random and arise from social stratification. For this paper, economic development is proxied by household consumption (HC), unemployment rate (UR) and Gini coefficient (GINI) and the following are the ARDL model equations:

LHC

$$\begin{aligned}
 &= \beta_0 + \beta_{PPPv}PPPv_{t-1} + \beta_{PPPSf}PPPSf_{t-1} + \beta_{PPSe}PPSe_{t-1} + \beta_{INF}INF_{t-1} + \beta_{GH}GH_{t-1} \\
 &+ \beta_{TO}TO_{t-1} + \beta_{LHC}LHC_{t-1} + \sum_{i=1}^p \beta_i PPPv_{t-i} + \sum_{j=0}^q \beta_j PPSPf_{t-j} + \sum_{k=0}^r \beta_k PPSe_{t-k} \\
 &+ \sum_{l=0}^u \beta_l INF_{t-l} + \sum_{m=1}^v \beta_m GH_{t-m} + \sum_{n=1}^t \beta_n TO_{t-n} + \sum_{o=0}^u \beta_o LHC_{t-o} \\
 &+ \varepsilon_t
 \end{aligned} \tag{3}$$

$$\begin{aligned}
 &UR \\
 &= \beta_0 + \beta_{PPPv}PPPv_{t-1} + \beta_{PPPs_f}PPPs_f_{t-1} + \beta_{PPPse}PPPse_{t-1} + \beta_{INF}INF_{t-1} + \beta_{GH}GH_{t-1} \\
 &+ \beta_{TO}TO_{t-1} + \beta_{UR}UR_{t-1} + \sum_{i=1}^p \beta_i PPPv_{t-i} + \sum_{j=0}^q \beta_j PPPs_f_{t-j} + \sum_{k=0}^r \beta_k PPPse_{t-k} \\
 &+ \sum_{l=0}^u \beta_l INF_{t-l} + \sum_{m=1}^v \beta_m GH_{t-m} + \sum_{n=1}^t \beta_n TO_{t-n} + \sum_{o=0}^u \beta_o UR_{t-o} \\
 &+ \varepsilon_t.
 \end{aligned} \tag{4}$$

$$\begin{aligned}
 &GINI \\
 &= \beta_0 + \beta_{PPPv}PPPv_{t-1} + \beta_{PPPs_f}PPPs_f_{t-1} + \beta_{PPPse}PPPse_{t-1} + \beta_{INF}INF_{t-1} + \beta_{GH}GH_{t-1} \\
 &+ \beta_{TO}TO_{t-1} + \beta_{GINI}GINI_{t-1} + \sum_{i=1}^p \beta_i PPPv_{t-i} + \sum_{j=0}^q \beta_j PPPs_f_{t-j} + \sum_{k=0}^r \beta_k PPPse_{t-k} \\
 &+ \sum_{l=0}^u \beta_l INF_{t-l} + \sum_{m=1}^v \beta_m GH_{t-m} + \sum_{n=1}^t \beta_n TO_{t-n} + \sum_{o=0}^u \beta_o GINI_{t-o} \\
 &+ \varepsilon_t
 \end{aligned} \tag{5}$$

where (in both economic growth and economic development models): GDP represents economic growth; ED represents economic development; PPPv is value of PPP (investment); PPPsf is PPP finance source; PPPse is PPP investment by sector; INF is inflation rate, TO is trade openness; and GH is government expenditure on health.

The stationarity of research data is an important consideration in time series and regression. As such this study, consistent with the studies by Makuyana and Odhiambo (2018, p. 509), Shrestha and Bhatta (2018, p. 74), Sultanuzzaman *et al* (2018, p. 10), Nkoro and Uko (2016, p. 70), Ergun and Göksu (2013, p. 200), Odhiambo (2008, p. 704) and Shrestha and Chowdhury (2007, p. 1529), employs Augmented Dickey-Fuller (ADF), Dickey-Fuller (DF), Durbin-Watson (DW) and Phillip-Perron (PP) tests as unit root tests to ensure stationarity of the study's data. When first differenced, the research data turned stationary and was thus ready for forecasting. Furthermore, the study applies normality, serial correlation and heteroscedasticity tests as diagnostic tests aimed at improving the overall robustness of the ARDL model comprising its goodness of fit, stability and functional form (Menegaki, 2019, p. 1; Cañal-Fernández & Fernández, 2018, p. 8; Makuyana & Odhiambo, 2018, p. 519; Dritsaki & Stiakakis, 2014, p. 187; Sultanuzzaman *et al*, 2018, p. 12; Matlasedi, 2017, p. 12). The diagnostic tests reveal that the ARDL model is stable and robust.

4. Results

In this section, the study presents and discusses the relationship between PPPs and Zambia's economic growth and economic development as well as the impact of PPPs on Zambia's economic growth and economic development.

4.1. Serial correlation

Serial correlation, also known as auto-correlation, has the underlying assumption suggesting that the successive values of the random error term are temporally independent (Oluchukwu *et al*, 2019, p. 86). In this study, the Breusch-Godfrey statistic was used to test for the presence of auto-correlation (Moawad, 2019, p. 625). The results of serial correlation for this study are presented in Table 1.

TABLE 1: SERIAL CORRELATION RESULTS

Variables	F-statistic	Probability
PPP and GDP	1.861825	0.2012
PPP and household consumption	0.469407	0.6349
PPP and unemployment	0.719788	0.4990
PPP and Gini coefficient	3.248356	0.0624

Source: Researchers' own computations

The results reveal that all the probability values were greater than 0.05. It is, therefore, concluded that there were no serial correlations or stochastic error terms in the model, allowing acceptance of the null hypothesis that error terms of the ARDL model are not serially correlated. The test results indicate that there were no serial correlations among the research variables. This means that statistical inference of the ARDL model was not affected. This entails that the statistical inference of the ARDL model remained robust and resulted in reliable research results.

4.2. Relationships among PPP, GDP and economic development

The cointegration test results in Table 2 indicate the existence of long-run relationships between the research variables: PPP and GDP; PPP and household consumption; PPP and the unemployment rate; and PPP and the Gini coefficient. The results are consistent with the findings by Atapattu (2019, p. 91) and Eryiğit (2012, p. 71) in Asia and Turkey. The study's results have established that there is a relationship between PPPs and Zambia's economic development (proxied by household consumption, unemployment and Gini coefficient). The results mean that PPPs affect household consumption, unemployment rates

and Gini coefficient. Similarly, studies conducted in Africa, Europe and China by Du *et al* (2018, p. 1), Jomo, Chowdhury, Sharma and Daniel (2016, p. 2) and Blanc-Brude and Strange (2007, p. 94) concluded that there were long-run relationships between investments and economic development (household consumption).

TABLE 2: COINTEGRATION RESULTS

Variable	F-statistic	Critical value					
		1%		5%		10%	
		I0 bound	I1 bound	I0 bound	I1 bound	I0 bound	I1 bound
PPP and GDP	5.540077	3.41	4.68	2.62	3.79	2.26	3.35
PPP and household consumption	7.478192	3.41	4.68	2.62	3.79	2.26	3.35
PPP and unemployment	7.771779	3.41	4.68	2.62	3.79	2.26	3.35
PPP and Gini coefficient	16.07779	3.41	4.68	2.62	3.79	2.26	3.35

Source: Researchers' own computations

4.3. Impact of PPPs on GDP

The study's results in Table 3 demonstrate that there was a significant and positive relationship between PPP gearing and GDP. Similarly, in Europe, studies conducted by Spiliot (2015, p. 174) found that increased debt finance improved the economic growth of countries as debt finance increased investment leading to the spurring of economic activities. As argued by Hyun, Park and Tian (2018, p. 5), in Asia, increased debt finance encourages the participation of the private sector in the PPP market thereby attracting investment that contributes to the growth of the economy. With regards to PPP investment, the results reveal that PPP investments have a positive impact on GDP as they contributed to the rise in Zambia's GDP. In Asia, South Africa, Canada, South Korea, Egypt, Europe and the US, studies conducted by Atapattu (2019, p. 91), Oxford (2019, p. 3), Lee, Han, Gaspar and Alano (2018:1), Khashaba, Aboelsoud and Sallam (2016, p. 1), Rankin, Nogales, Santacoloma and Mhlanga (2016, p. 8), the Canadian Centre for Economic Analysis (2016, p. 1), Jasiukevičius and Vasiliauskaitė (2013, p. 226) and Kim, Jungwook, Sunghwan and Seung-Yeon (2011, p. 5) found that PPP investments affect economic growth positively as they create businesses and spur economic activities which lead to increased

national output. However, the results contradict the findings from Portugal and Europe by Pimentel, Aubyn and Ribeiro (2017, p. 3) and Gondard, Romero and Ravenscroft (2018, p. 4), who suggest that investments affect GDP negatively by crowding out businesses owned by domestic entrepreneurs and burdening public purse. Furthermore, the study reveals that individual investment by sector was not at an investment scale that affected GDP. The study's results contradict the suggestions by PricewaterhouseCoopers (PWC) (2016, p. 1) and the International Monetary Fund IMF (2015, p. 5) which state that prioritising investments in sectors like infrastructure and agriculture in developing countries will improve GDP. As the resources are limited, the Zambian government should focus more on encouraging PPP investments in other productive sectors like energy, agriculture and tourism, which have direct influences on GDP.

The overall results suggest that PPPs affect GDP positively. For the period under review, PPPs spurred economic activity through the creation of businesses. As PPPs impact GDP positively, the Zambian government should continue harnessing PPP investments as a pro-poor model that bolsters economic activities and fosters economic growth. Harnessing PPP investments means that the government, through the Finance Ministry, should scale up investments in PPPs and widen the scope of sectors for PPP investments so as to achieve inclusive and faster economic growth.

TABLE 3: IMPACT OF PPPs ON GDP

Long-run Coefficients				
Variable	Coefficient	Std error	t-statistic	Probability
Health	0.059926	0.065495	0.914971	0.3769
Inflation	-0.101756	0.015853	-6.418865	0.0000
PPP gearing	0.083784	0.021169	3.957936	0.0016
PPP investment	0.000303	0.00005	6.013366	0.0000
Trade openness	-2.894412	0.973576	-2.972971	0.0108
PPP sector	-0.044402	0.117113	-0.379138	0.7107
C	6.60253	1.743076	3.787861	0.0023

Source: Researchers' own computation

4.4. Impact of PPPs on household consumption

The results in Table 4 indicate that with increased debt finance there is increased household consumption, resulting in improved living standards for ordinary people. The research results echo findings in China, Africa and

Europe by Du *et al* (2018, p. 1), Jomo *et al* (2016, p. 2) and Blanc-Brude and Strange (2007, p. 94), who suggest that increased debt capital increases the number and value of investments in an economy which results in creation of employment that could increase household consumption. This entails that the Zambian government should encourage debt financing through private sector engagement, as this increases the volume and scale of PPP investments and leads to spurring of economic activities, employment creation and improved household consumption. However, Du *et al* (2018, p. 22) and Blanc-Brude *et al* (2007, p. 94) caution that PPP projects should have an optimal capital structure that ensures maximum benefits to all stakeholders, including the investors.

PPP investments have a statistically significant and positive relationship with household consumption. It can also be construed that investments in PPPs not only created new jobs but also improved existing conditions for employees, leading to increased disposable income that would be spent on basic needs. In Nigeria, South Africa and Slovakia, research conducted by Oluchukwu, Chinyere and Francisca (2019, p. 82), Oxford (2019, p. 3), Adebayo and Ayegbusi (2017, p. 178) and Fabus (2015, p. 63) also found that PPP investments resulted in job creation and expansion in household expenditure. Therefore, to continue recording improved household consumption, the Ministry of Finance should continue attracting PPP investments by encouraging private sector engagement in PPP projects.

From Table 4, it is evident that PPP investment by sector has a statistically significant negative relationship with household consumption. It can be inferred that PPP investments in more than the prioritised sectors are needed to contribute positively to the household consumption so as to improve the living standards of ordinary people. As argued by Oxford (2019, p. 3), Adebayo and Ayegbusi (2017, p. 178), Fabus (2015, p. 63) and the International Finance Corporation [IFC] (2012, p. 1), investments in more sectors are required to improve the living standards of ordinary people. The Ministry of Finance should advocate for PPP policy amendment and changes to the PPP Act of 2009 by widening the scope of PPPs from just the infrastructure and services sectors to more sectors, so that PPPs can meaningfully and significantly affect Zambia's economic development.

TABLE 4: IMPACT OF PPPs ON HOUSEHOLD CONSUMPTION

Long-run Coefficients				
Variable	Coefficient	Std error	t-statistic	Probability
Inflation	-0.070682	0.005842	-12.098132	0.0000
Health	0.023177	0.025054	0.92508	0.3687
Trade openness	-1.209674	0.256882	-4.709069	0.0002
PPP gearing	0.023702	0.012322	1.923555	0.0724
PPP investment	0.000163	0.000023	7.157961	0.0000
PPP sector	-0.085445	0.045978	-1.858386	0.0816
C	8.906084	0.913864	9.745525	0.0000

Source: Researchers' own computation

4.5. Impact of PPPs on unemployment

Consistent with the studies by Studies conducted by Oluchukwu et al (2019, p. 82), Oxford (2019, p. 3), Adebayo and Ayegbusi (2017, p. 178) and Rankin *et al* (2016, p. 9) in Nigeria, South Africa and the US respectively, the results in Table 5 reveal that PPP investments had a statistically significant negative relationship with unemployment rates suggesting that an increase in PPP investments resulted in a drop in unemployment rates as new jobs were created. The Zambian government should scale up investments in PPPs, as additional employment can continue to be created. With regard to PPP gearing, the research results show that PPP gearing had a statistically insignificant and positive relationship with unemployment. The results imply that the current debt/equity ratio does not significantly affect unemployment. However, it can be construed that with a higher debt/equity ratio, unemployment rates would surge, a situation that can frustrate government efforts to create jobs for citizens.

Studies conducted in Portugal by Pimentel, Aubyn and Ribeiro (2017, p. 3) found that investments can generally have a crowding out effect on domestic businesses, leading to higher unemployment. As investors bring with them huge finance and expertise, domestic businesses may not have such capacity and could end up closing their businesses as competition gets stiff. PPP investment by sector has a significant negative relationship with unemployment. Similarly, in South Africa and Nigeria, studies conducted by Oluchukwu *et al* (2019, p. 82), Oxford (2019, p. 3) and Adebayo and Ayegbusi (2017, p. 178) found that investments in priority sectors reduced unemployment rates. However, Chang (2007, p. 1647) disagrees with such findings, as his studies in Taiwan

reveal that investment by sector might not be significant and so do not affect unemployment.

TABLE 5: IMPACT OF PPPs ON UNEMPLOYMENT

Long-run Coefficients				
Variable	Coefficient	Std error	t-statistic	Probability
Inflation	0.185121	0.120513	1.536099	0.1388
Health	2.074942	0.456352	4.546805	0.0002
Trade openness	-8.246919	5.881976	-1.402066	0.1748
PPP gearing	0.060874	0.279058	0.218141	0.8293
PPP investment	-0.001985	0.000667	-2.976614	0.0070
PPP sector	-3.850735	1.513455	-2.544334	0.0185
C	2.532854	20.139312	0.125767	0.9011

Source: Researchers' own computation

Indeed, there are bigger questions about growth itself as a political-economic ideal. Debates around ‘Africa rising’ (Obeng-Odoom, 2015, p. 234) illustrate the point. Although crucially important, questions of wellbeing and happiness, for example, are not easily addressed by an ever-expanding economy. Inequality is as concerning.

4.6. Impact of PPPs on Gini Coefficient

With increased debt finance, there is a higher Gini coefficient, resulting in increased income inequalities and hence increasing the gap between rich and poor. The study’s results in Table 6 mean that investments with high debt capital can lead to the crowding out of domestic businesses thereby contributing to job losses that increase the income inequality gap. Du *et al* (2018, p. 1), Jomo *et al* (2016, p. 2) and Blanc-Brude *et al* (2007, p. 94) do not affirm these results, as they found that in Africa, Europe and China, increased debt finance capital contributed to the reduction of income inequalities as investments create employment that could lead to a reduction in the gap between rich and poor.

It is evident that PPP investments have a statistically significant and positive relationship with income inequalities (Gini coefficient) as PPP investments result in a rise in income inequality and contribute to a widening of the gap between rich and poor in Zambia. The studies conducted by Couto (2018, p. 25) and Celik and Basdas (2010, p. 358) also found that investments resulted in increased income inequality through crowding-out effect on domestic businesses thereby contributing to more job losses. This can be compounded

by the action of investors who might employ international experts at the expense of well-qualified Zambians. However, Hooper, Peters and Pintus (2018, p. 1), Agusalim and Pohan (2018, p. 1) and Lee *et al* (2018, p. 10) found that increased investments contribute to reduction in income inequalities through the creation of employment and spurring of economic activities. This is premised on the understanding that investments promote economic growth that leads to reductions in the gap between rich and poor (Agusalim & Pohan, 2018, p. 1).

In the US, Hooper *et al* (2018, p. 1) conclude that an increase in the rate of spending (through PPPs) on highways and higher education in a given decade contributed to a reduction in income inequalities through the creation of employment. The sharp contrast between this study's results with the views of Hooper, Peters and Pintus (2018, p. 1), Agusalim and Pohan (2018, p. 1) and Lee *et al* (2018, p. 10) suggests that institutions matter, not only in the form, but also the formation of PPPs within particular socio-spatial and political-economic relations. They reflect wider uneven geographical and property relations and social stratification (Obeng-Odoom, 2020). While it may be argued that the PPP investments made so far may not have been enough to have an impact on the Gini coefficient. Jianu (2018, p. 121) and Ray and Linden (2018:1) argue that investments in prioritised sectors reduce income inequalities through the creation of employment that benefits unemployed but qualified people, the overall evidence from elsewhere in Africa points to more critical conclusions (Obeng-Odoom, 2018, p. 447 & Loxley, 2013, p. 485).

Indeed, the findings in the present study (Table 6) suggest that the observed relationship between PPPs and income inequalities is not merely the outcome of poor implementation of PPPs. That is why PPP investment by sector has a statistically insignificant negative relationship with the Gini coefficient which entails that PPP investments in the prioritised sectors based on Zambia's PPP Act (infrastructure and services) has neither a positive a statistically significant nor a negative statistically significant impact on the Gini coefficient (income inequality). The research results imply that PPP investment by sector does not impact inequalities in income in Zambia.

TABLE 6: IMPACT OF PPPs ON GINI COEFFICIENT

Long-run Coefficients				
Variable	Coefficient	Std error	t-statistic	Probability
Inflation	0.19492	0.095552	2.039931	0.0548
Health	-0.796208	0.383197	-2.077805	0.0508
Trade openness	1.351746	4.27059	0.316524	0.7549
PPP gearing	4.241393	0.294041	14.424475	0.0000
PPP investment	0.00803	0.000534	15.051365	0.0000
PPP sector	-0.615994	0.821721	-0.749639	0.4622
C	-241.68641	21.48743	-11.247805	0.0000

Source: Researchers' own computation

5. Conclusion and policy recommendations

Public private partnerships (PPPs) are usually presented as a panacea. The number and extent of PPPs have, accordingly, increased in Africa. Many studies have been conducted on PPPs, of course, but not so much work has been done in recent times about the posited relationship between PPPs, growth, and inequality (economic development). The present study evaluated the impact of PPPs on Zambia's economic growth and development for the period from 2000 to 2017. As there has been limited research on the impact of PPPs on economic growth and development in developing countries like those in Africa, this research equally contributes to bridging that research gap in the developing countries. The research results also improve the diversity of current research results by demonstrating that PPPs have affected Zambia's economic growth and development positively. The use of additional research variables that have not been used in the existing literature has contributed to the quality of the research results, so making policy recommendations feasible and reliable.

With limited financial resources, national governments such as Zambia now turn to private sector to collaborate in financing development. The research results suggest that PPPs play an important role in improving economic growth and economic development. The study reveals that there is a relationship between PPPs and economic growth for the period under review. Similarly, PPPs relate to economic development proxied by household consumption, unemployment and Gini coefficient. The results of the study demonstrate that increased value of PPPs and increased debt finance affected GDP positively through the spurring of economic activities and the creation of businesses.

Similarly, increased debt finance and value of PPPs affected economic development positively by creating new jobs thereby increasing disposable income. On the other hand, PPPs affect economic development negatively by raising the Gini coefficient through the crowding-out of domestic businesses thereby contributing to job losses. With other studies in Africa suggesting that PPPs are complicit in driving even more serious, long-term social stratification, it is important to question and re-examine the widely held view that PPPs constitute a panacea.

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Conflict of interest

The authors declare no conflict of interest.

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